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ABSTRACT

It was hypothesized that writers of sentence pairs with clear relationships would have better recall of second sentences than would writers of sentence pairs with unclear relationships. Clear connections between sentences in sentence pairs were defined as those sentences in which the language of the first sentence was explicitly picked up in the second sentence to fulfill a "given/new" contract. In each of ten papers used in the study, three pairs of connected sentences were selected that honored the given/new contract, as were two pairs of unconnected sentences violating the given/new framework. The central task in the study was for the writers of the term papers to try to remember the second sentence in each pair. Analyses showed that the ten writers tended to remember the second sentence of pairs with clear connections, but not the second sentence of pairs with unclear connections. Writers whose sentences were usually clearly connected had a better memory for clear connections than for unclear connections. Thus, the research demonstrated relationships between the structure of a writer's language and memory for that language, supporting the idea that the nature of the connections between sentences may be closely linked to the thinking processes of the writer. (RL)

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THE RELATIONSHIP BETWEEN WRITTEN COHERENCE AND THINKING

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This research grew out of my work in helping graduate students at the University of Pittsburgh with their writing. In talking with students about their papers, I found over and over that when I asked about specific sentences in their papers that seemed out of place--or--sentences which didn't make sense in relation to previous sentences--students would say things like "Well, I didn't really know what I wanted to say," or "I wasn't sure of what I thought in that part." When asked why one particular sentence followed another particular sentence, students did not focus on what they had written, but instead, consistently talked about their thinking at that point in the paper. The replies of these students made me think that sentence connections might be particularly significant because the quality of the sentence connections seemed to be linked to the thinking process of the writer. I'm going to talk this afternoon about a study we did to begin to look at the relationship between sentence connections and thinking.

But how does one measure thinking? Since thinking cannot be measured directly, we measured thinking indirectly using the vehicle of memory. In our study, we assumed that writers' memory for what they had written would tell us about their thinking process. Good memory, we assumed, indicated clear thinking; whereas, poor memory indicated unclear thinking. We hypothesized that memory would be good, indicating clear thinking, for clearly connected sentences; but memory would be poor, indicating unclear thinking, for poorly connected sentences.

To test our hypothesis, we gave 10 writers facsimiles of their own term papers from courses at the university. The facsimiles went up to and included the first sentence of a target sentence pair. We asked the

writers to try to remember the next sentence, the second sentence in the pair. But before we look at the memory task, let me explain the method used to select the sentence pairs. The method used in our study to select sentence pairs for the memory test adapts the given/new contract of the psycholinguists, Clark and Haviland,[1] to judge the relative connectedness or unconnectedness of two sentences. Sentences that honor the given/new contract were called unconnected.

We cannot go into all the complexities of the given/new contract here, but you do need to know that the given/new contract requires that each sentence convey two kinds of information, given information and new information. Given information is information writers believe readers already know. Given information is, in a sense, on stage, or "in the air" as Chafe[2] puts it. New information, on the other hand, is information writers believe readers do not yet know or are not thinking about until writers call attention to it. New information in one sentence often becomes given information in the following sentence. Thus the given/new contract puts a constraint on writers: It demands that writers arrange material so that readers' expectations are fulfilled that each sentence convey given and new information.

Look at the following two sentences to see how the given/new contract works:

GIVEN NEW
(Saratoga) (is mentioned in a song by Carly Simon.)

GIVEN NEW
(The song) (is called "You're so Vain.")

If we say that the given information in the first sentence is "Saratoga," then the new information in the first sentence is what we learn about

Saratoga--that it "is mentioned in a song by Carly Simon." That new information of the first sentence becomes the given information in the second sentence. "The song," then, in the second sentence is the given information, and the new information in that sentence is that the song "is called 'You're so Vain.'"

In our study, clear connections were defined as those sentences in which the language of the first sentence is explicitly picked up in the second sentence to fulfill the given/new contract. And unconnected sentences were defined as those sentences which violated the given/new contract by, for example, having all new information in the second sentence as in these sentences.

GIVEN NEW
(Saratoga) (is mentioned in a song by Carly Simon.)

NEW
(The airplane landed safely even though it was raining.)

In these sentences no information from the first sentence is picked up in the language of the second sentence.

In each of the 10 papers in the study we identified 3 pairs of connected sentences which honored the given/new contract, and two pairs of unconnected sentences which violated the given/new contract. We chose three connected pairs and two unconnected pairs because it was easier to find connected pairs than to find unconnected pairs. In choosing all pairs of sentences, attempts were made to equate sentence length, importance to central focus of the content of the paper, and chronological occurrence in the paper. After identifying three connected and two unconnected sentence pairs from each paper, we were ready to talk to the writers.

In the central task of the study, as I mentioned earlier, writers were presented with their entire paper, up to, and including, the first sentence of the pair, and were asked to try to remember the next sentence, the second sentence in the pair. With 10 writers studied, the results are consistent with our hypothesis that writers will remember the second sentence of pairs with clear connections, but will not remember the second sentence of pairs with unclear connections.

Let's look at one writer's response, Writer AE, to see how this study works. At the start of the testing session, Writer AE was asked to summarize orally the major points in his paper to get him to draw on his resources in remembering what he had written. After the summary, came Part A in which he was given a facsimile of his original page on which the sentences occurred--up to and including the first sentence of the pair. The writer was asked to continue writing from the last sentence as if he were revising the paper. What the writer wrote in Part A was not analyzed. The purpose of asking him to continue writing as if he were revising the paper was to stimulate his memory in preparation for the memory task, Part B.

Part B, the memory task, tested our hypothesis. In part B, the writer was presented with a duplicate of the facsimile from Part A, but this time he was asked to try to remember <u>verbatim</u> what he had written in the original paper. He was not really expected to remember verbatim the wording of the original sentence, but these instructions were used to encourage him to remember the original ideas. The same procedure, using Part A and Part B was followed for each of the remaining sentence pairs.

Let's look now at the results of the memory test for Writer AE for one connected pair of sentences and for one unconnected pair of sentences.

Because of our limited time today, we won't go through the process of analyzing writer AE's sentence pairs for connectedness, but analysis shows that the connected pair honors the given/new contract; whereas, the unconnected pair violates the given/new contract. The result of the memory test show that this writer remembered the second sentence in the connected sentence pair, but did not remember the second sentence in the unconnected sentence pair. Look at the first clearly connected sentence pair:

CLEAR CONNECTION - SUBJECT AE

ORIGINAL SENTENCE 1: Goodman began his research during the last decade, when psycholinguists were beginning to view comprehension as a much more complex phenomenon than they had previously thought.

ORIGINAL SENTENCE 2: It was not true, they discovered, that comprehension is a passive operation in which the listener simply receives phonological representations.

REMEMBERED SENTENCE 2: In such and such an experiment, researchers concluded that perception of speech is not merely a passive process, but one of snythesis and active construction of sense along with sound.

Remember that Writer AE only saw Original Sentence 1 and was trying to remember Original Sentence 2. If you compare Original Sentence 2 to Remembered Sentence 2, you will see that the writer has not only used the same units of meaning in both sentences, but has also even used some of the same vocabulary.

The original wording of the sentence that "it is not true that comprehension is a passive operation" is remembered as "perception of speech is not merely a passive process." In fact, the writer has remembered more "meaning" around the second sentence than was in the original

sentence which seems to indicate that his thinking surrounding this connected pair of sentences is clearly developed.

Look now at the first pair of not so clearly connected sentences:

UNCLEAR CONNECTION - SUBJECT AE

ORIGINAL SENTENCE 1: Stressing again the importance of internalized information, Goodman has written that children speaking any dialect "can be taught by building upon their linguistic competence, their strengths rather than their weaknesses."

ORIGINAL SENTENCE 2: He notes that the English spelling system cuts across dialects - "picture" is spelled the same way by everyone, no matter how it is pronounced- and therefore predicts success as soon as instructors stop "rejecting children's language and start building on it."

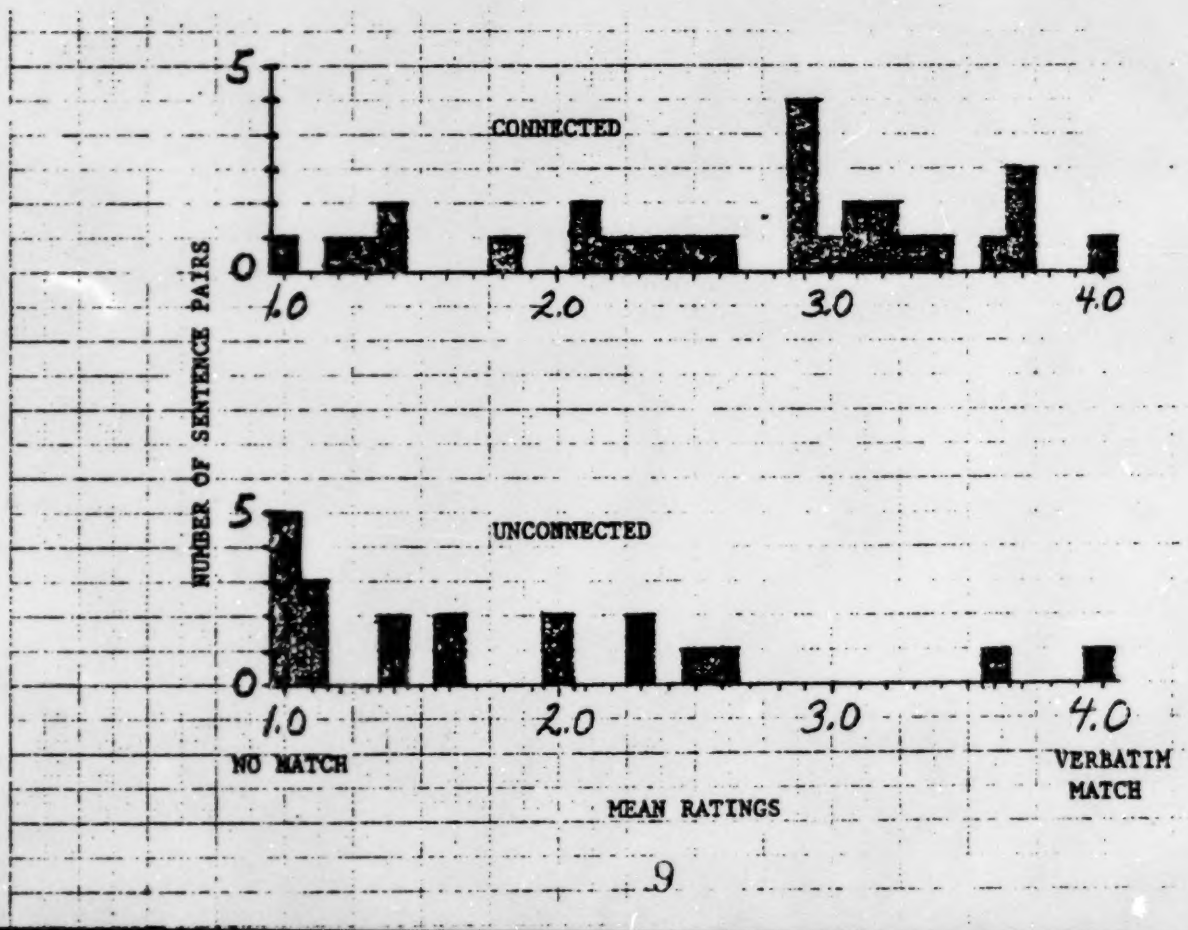
REMEMBERED SENTENCE 2: In the traditional structure and by the dictates of conventional reading methodology, such strengths are consistently ignored.

If you read these sentences after this talk you will see that Writer AE did not remember ideas of the original sentence. The major idea of Remembered Sentence 2 is "strengths," the last line of Remembered Sentence 2; but in Original Sentence 2, that idea of reference to it does not even appear. In this case, the ideas of Original Sentence 2 and Remembered Sentence 2 are different and Writer AE's results are, therefore, consistent with the hypothesis that he will not remember the major ideas of the second sentence in an unconnected pair.

Most writers, in fact, had results much like the results of Writer AE. The results of all 10 writers are shown in the bar graph below. To obtain this bar graph we gave Original Sentence 2 and Remembered Sentence 2 of all 10 writers to 11 raters, graduate students and faculty members in the English and Psychology Departments at the University of Pittsburgh. The raters were instructed to rate how well the remembered

sentences matched the original sentences. A rating of 4 was given to an almost verbatim match, while a rating of 1 was given if there was no match. Ratings of 2 and 3 were given for matches in between the two extremes.

The results of this procedure are what is shown in the bar graph. If the ratings are consistent with our hypothesis, we would expect most of the bars to be at the high end of the scale for the top graph, the connected sentences; and most of the bars to be at the low end of the scale for the bottom graph, the unconnected sentences. We can see from the graph that this is, in fact, what happens. The ratings for the top graph, the connected sentences, fall at the high end of the scale with most above 2, while the ratings for the bottom graph, the unconnected sentences fall at the low end of the scale with most below 2.



These results suggest at least two implications for the teaching of writing, specifically for the revision process. First, an unclear connection could signal places in a paper about which writers may need to do further thinking. Second, an unclear connection gives writers a way to begin that thinking. Writers may begin by asking themselves questions about why the poorly connected ideas are next to each other. Should the sentences be connected? If they should, how? If they should not, should one be moved to another place in the paper? Or should one idea be omitted? And so on and so on. So you can see that the unclear connection can be both a marker of a point in the paper to begin a discussion, and also, it can be a way to begin to discuss that section of the paper.

In conclusion, however one describes the memory mechanisms which operate for our writers in this study, the fact remains that writers whose sentences are usually clearly connected have a better memory for clear connections than for unclear connections and from this result we suggest that when clear connections occur during writing, the thinking surrounding those connections is developed further than when unclear connections occur. Putting it another way, our demonstration of a relationship between the structure of a writer's language and his or her memory for that language supports the idea that the nature of the connections between sentences may be closely linked to the thinking processes of the writer.

FOOTNOTES

[1]Herbert H. Clark and Susan E. Haviland, "Comprehension and the Given/New Contract," Discourse Production and Comprehension, ed. Roy Freedle (Hillside, N.J.: Lawrence Erlbaum Associates, 1976).

[2]Wallace L. Chafe, "Language and Consciousness," Language, 50, (1974), 121.